



U.S. Department of Energy  
Energy Efficiency and Renewable Energy

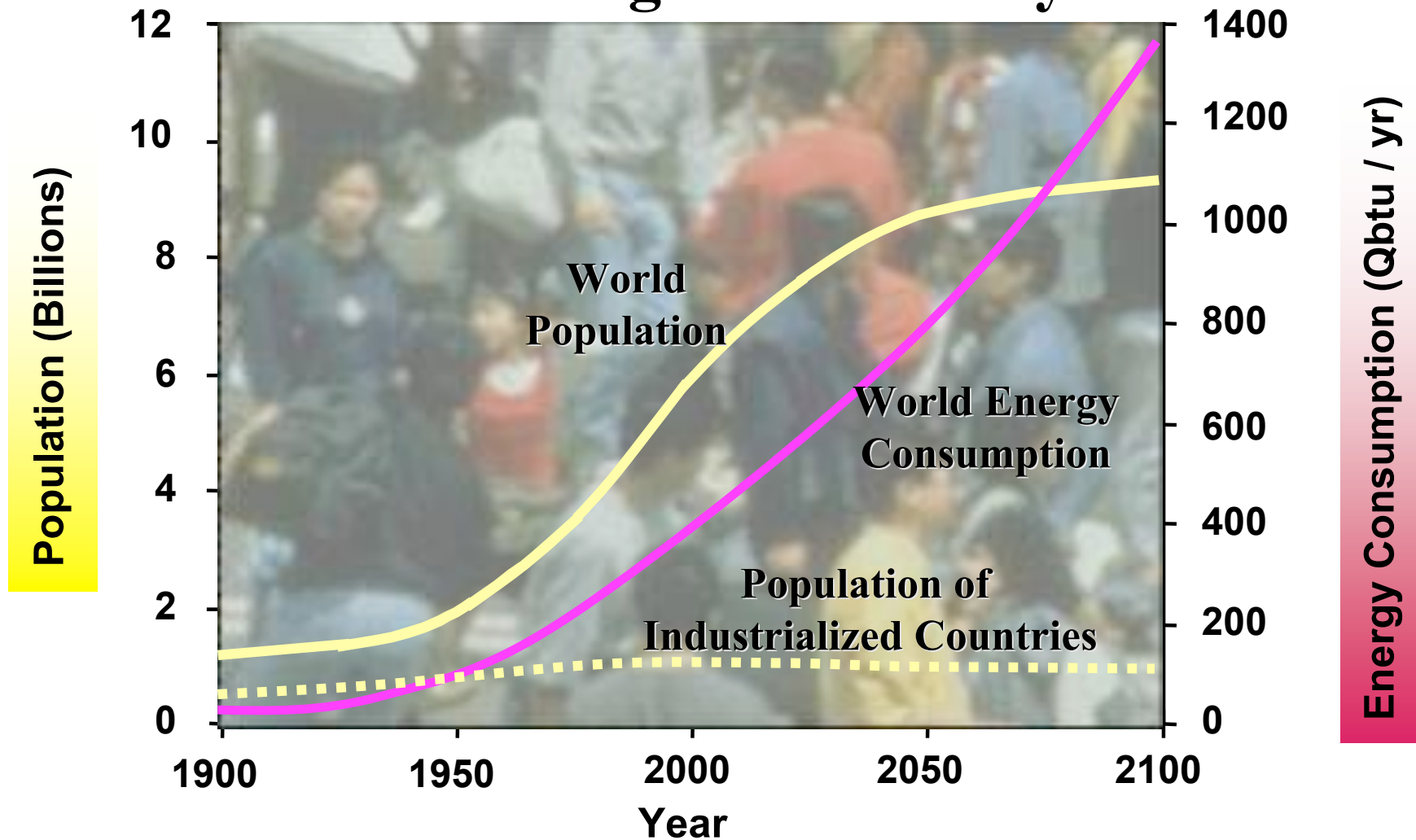
*federal energy management program*

# Securing Our Energy Future



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## World Energy Demand Growing Dramatically

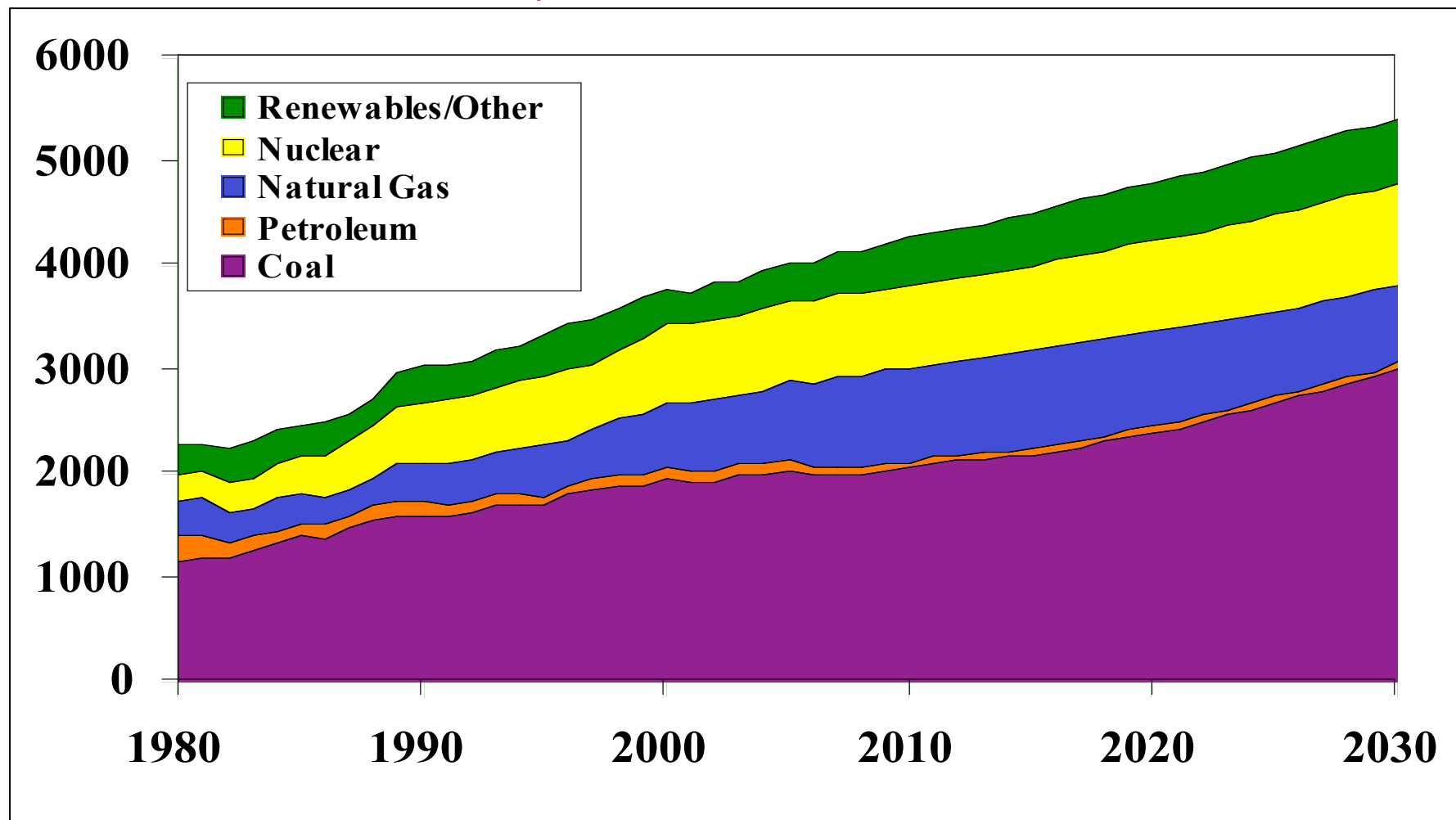




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# *U.S. Electricity Generation by Fuel*

**Electric Generation by Fuel 1980 – 2030 (billion kilowatt-hours)**

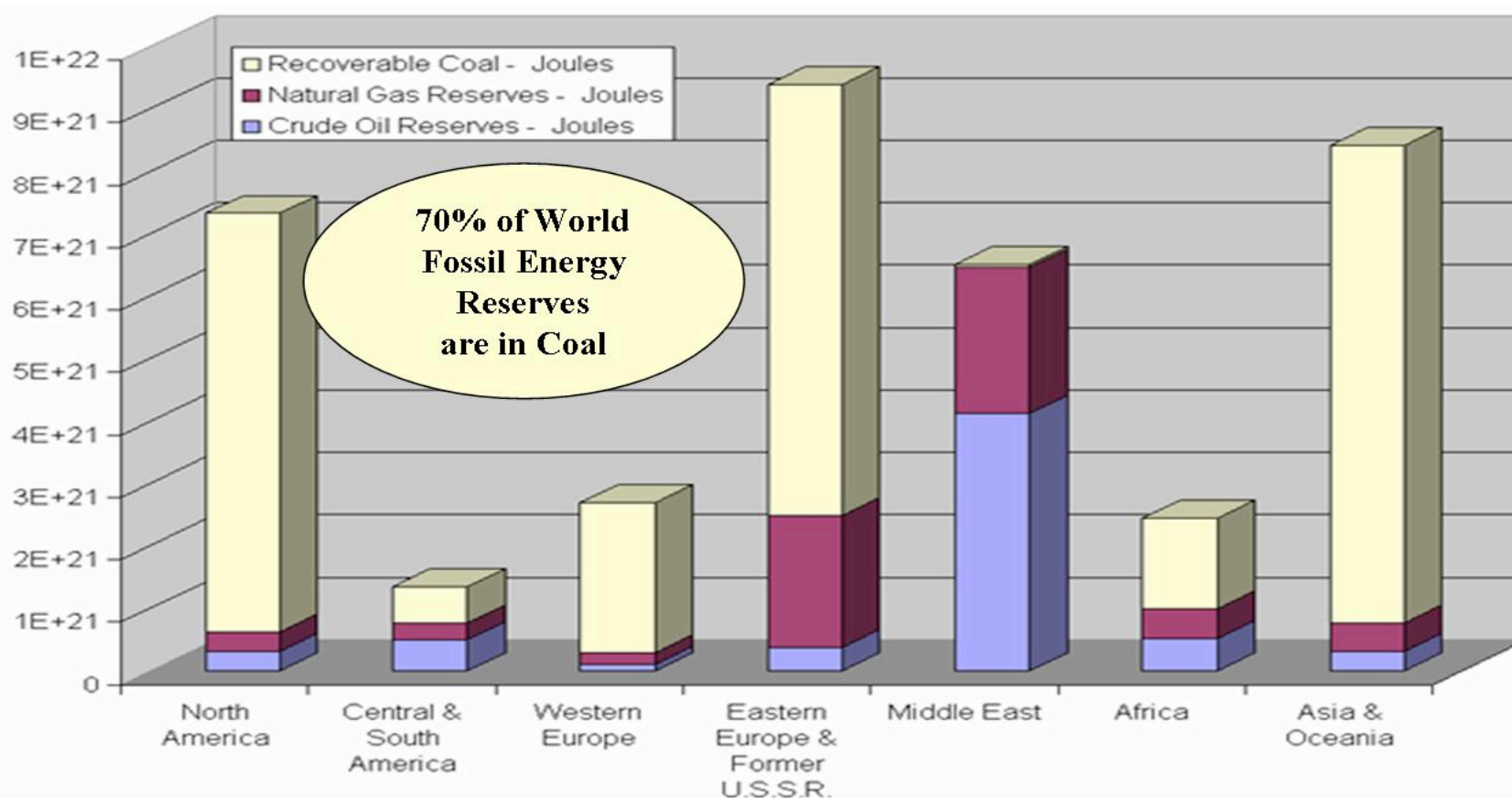


**Source:** EIA Annual Energy Outlook 2008



# *Why Do We Keep Coal in the Mix?*

## *World Energy Reserves*



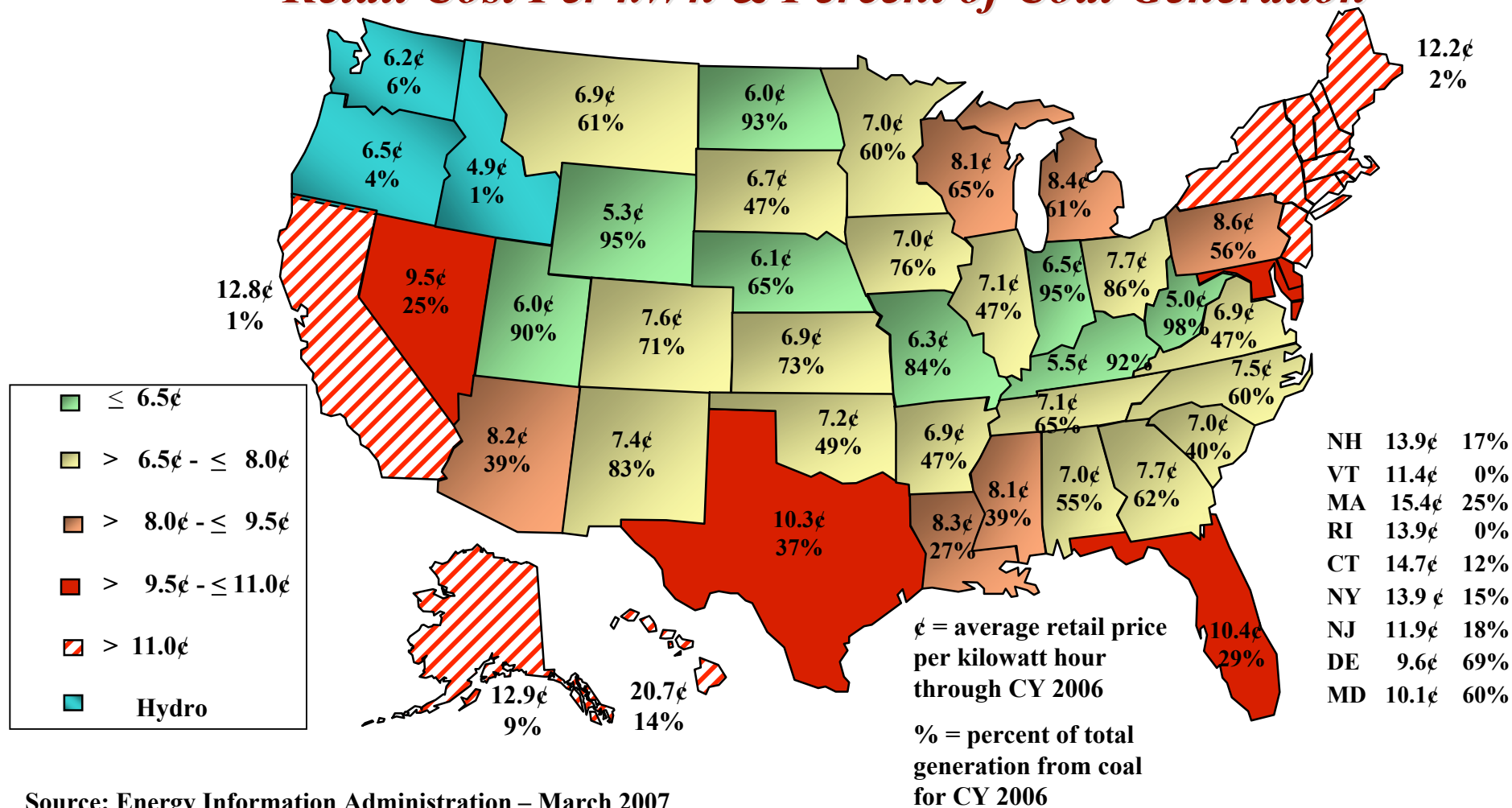
Source: Energy Information Administration/ International Reserves Data



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# The Impact of Coal on the Price of Electricity in the U.S.

## *Retail Cost Per kWh & Percent of Coal Generation*



Source: Energy Information Administration – March 2007



# Renewables

- **Biomass**
  - Wood & Wood Waste
  - Municipal Solid Waste
  - Switchgrass
  - Landfill Gas
  - Alcohol Fuels
  - Crops
- **Hydrogen Fuel Cells**
- **Ocean**
  - Wave
  - Gulf Stream
- **Wind**
- **Solar**

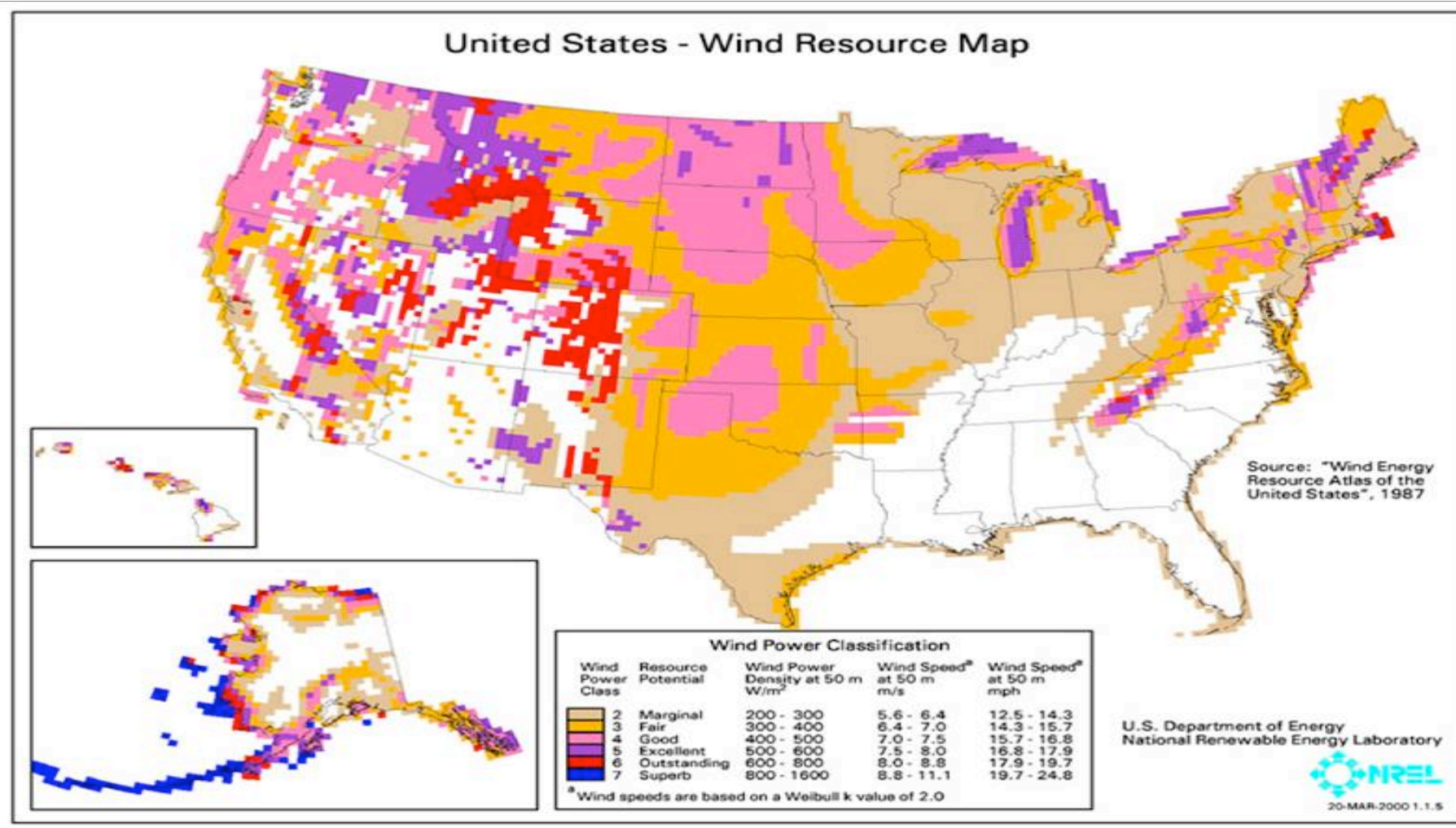




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# Renewables

**Wind- The National Renewable Energy Laboratory ranks Florida very poor for wind production**

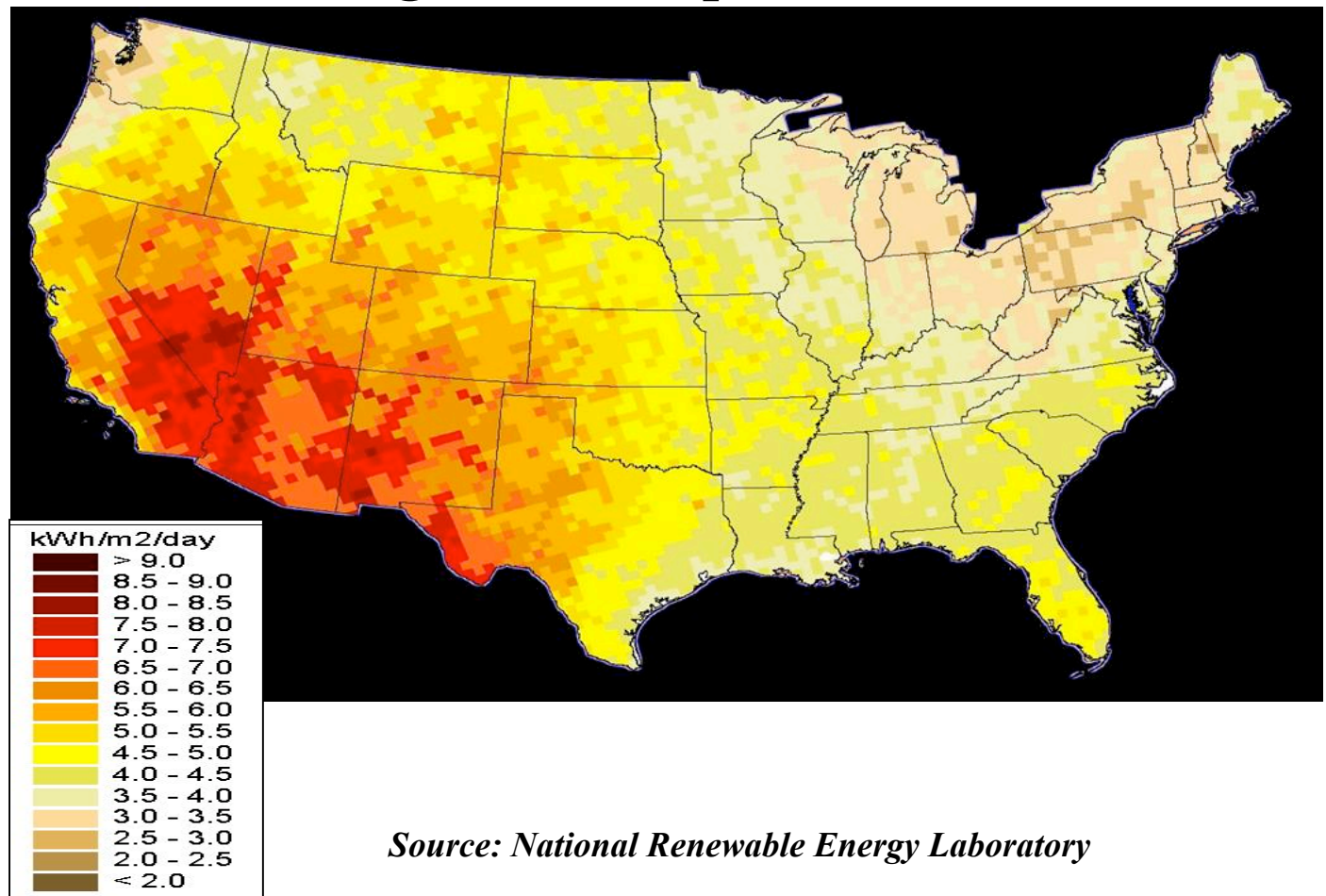




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# Renewables

**Solar- The National Renewable Energy Laboratory ranks  
Florida average for solar production**



*Source: National Renewable Energy Laboratory*



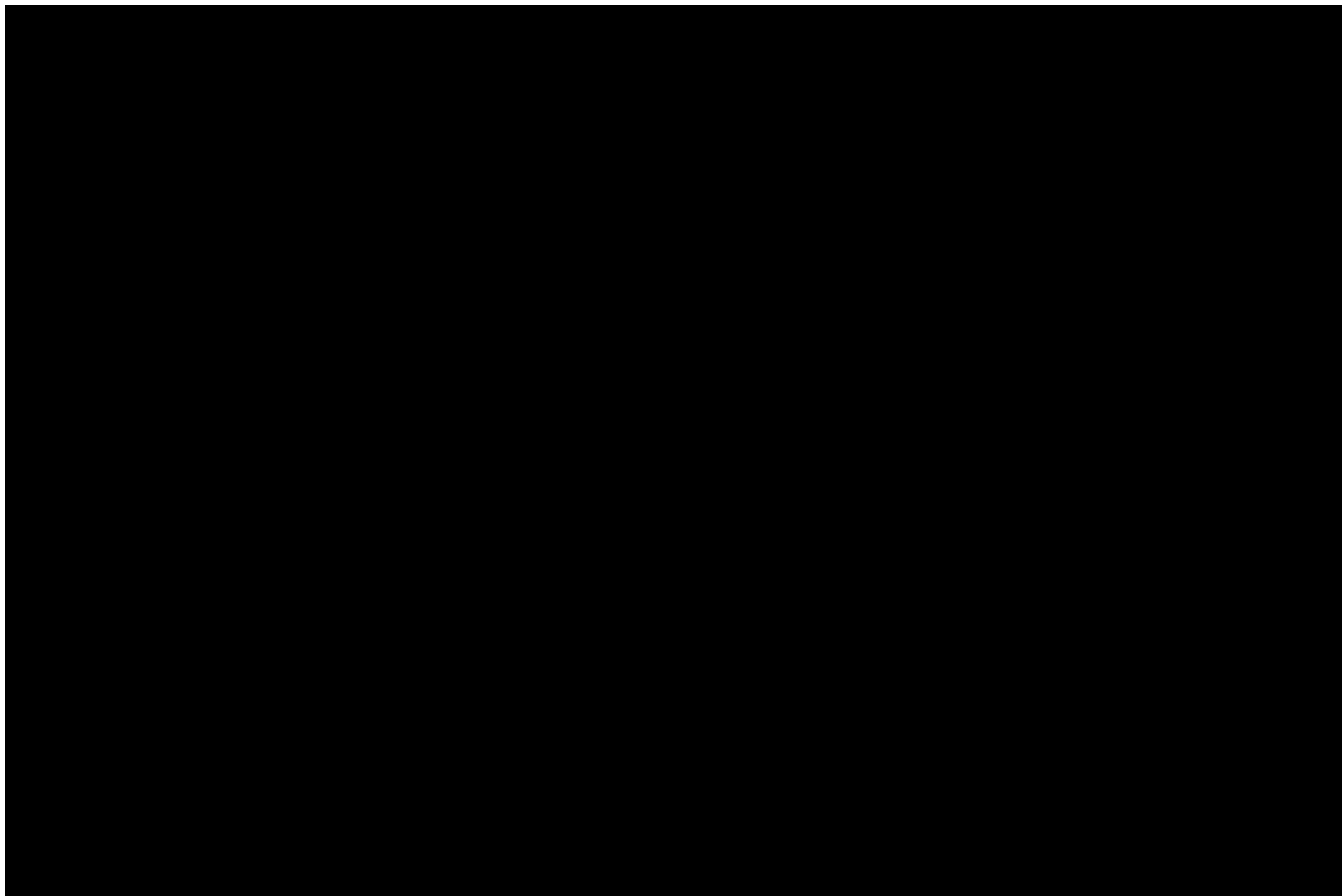
# Nuclear

- **19% of generation in U.S.**
- **80% of generation in France**
- **No CO<sub>2</sub>**
- **More than 30 proposed new reactors in the U.S.**
- **Best option for base load generation with coal off the table**





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# The CO<sub>2</sub> Factor

- **Emissions**

- SO<sub>2</sub>
- NO<sub>x</sub>
- Mercury
- Particulate Matter
- Greenhouse Gases/ CO<sub>2</sub>

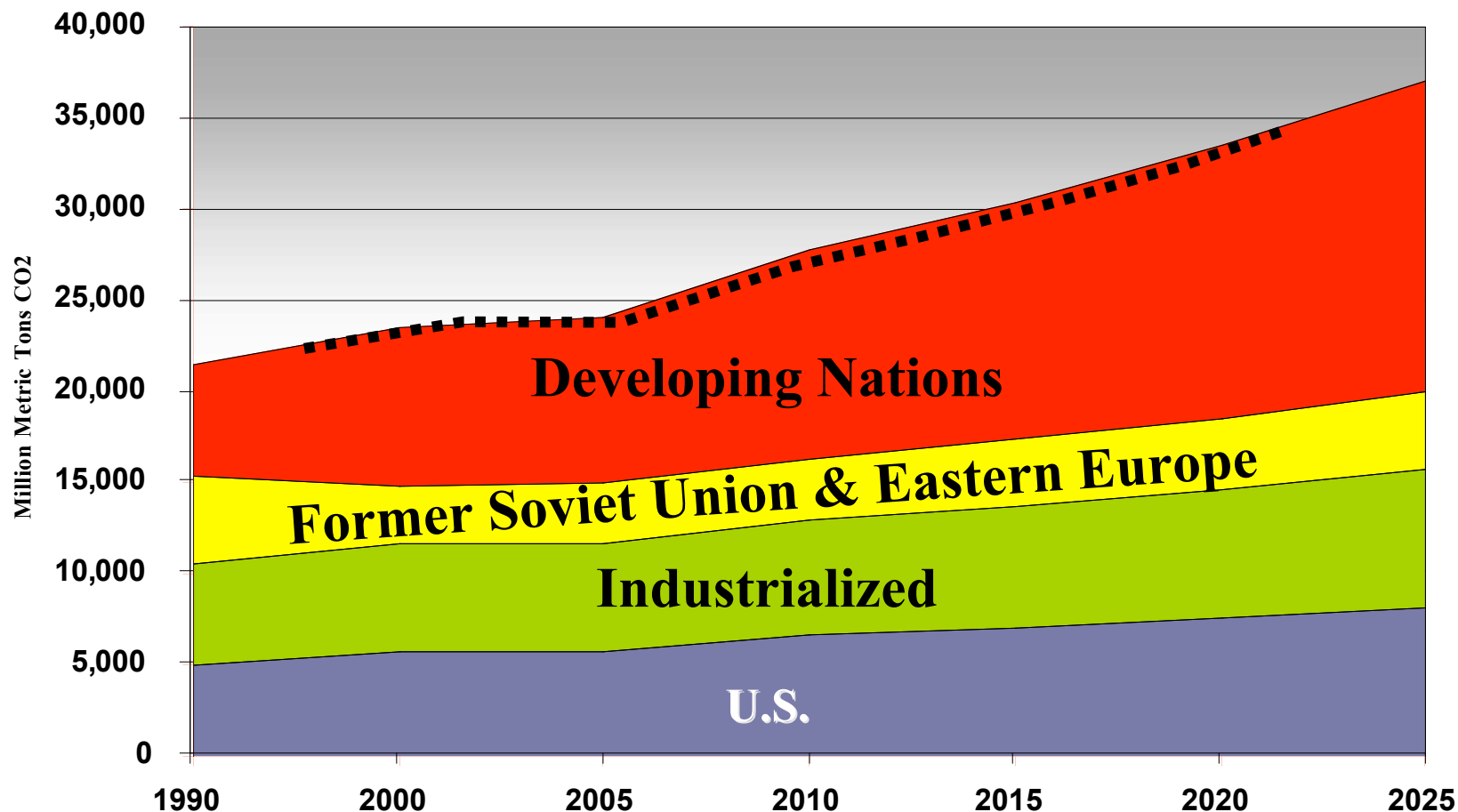


**Why is CO<sub>2</sub> Different?**



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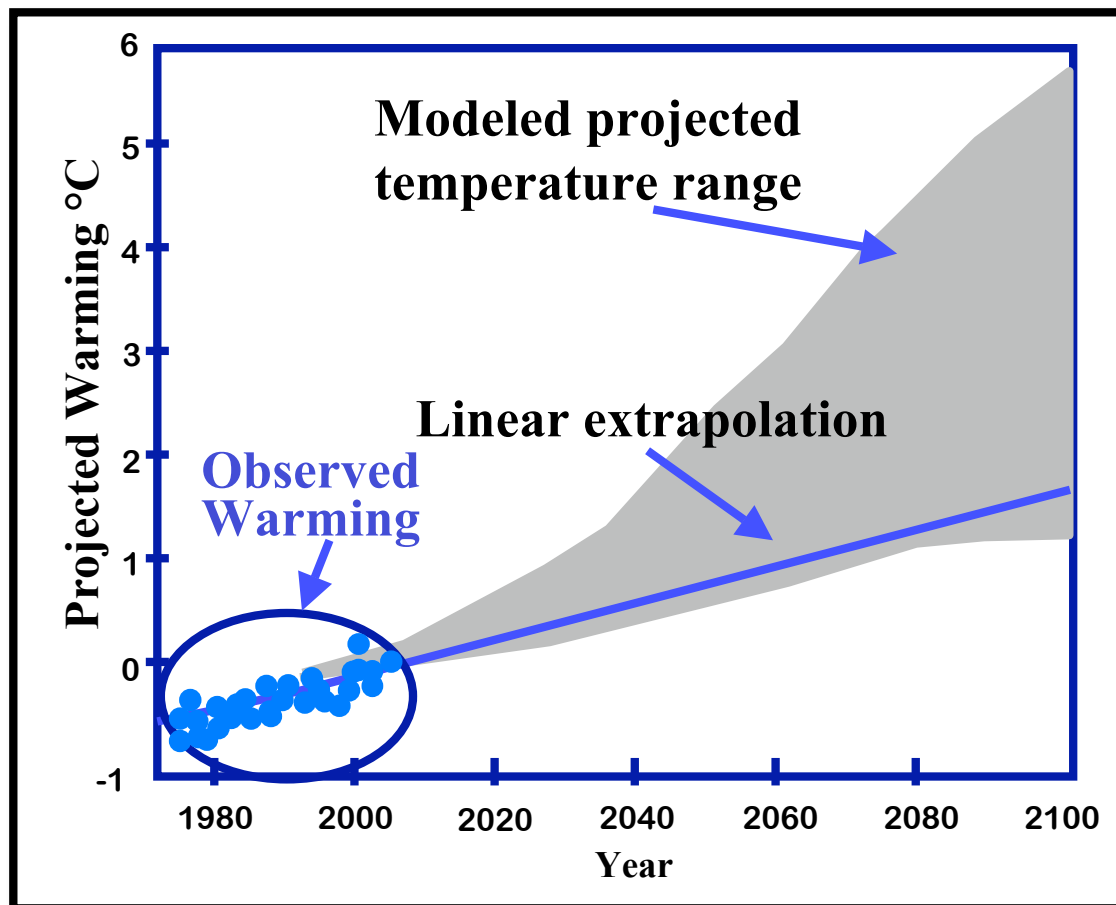
# Climate Change is a Global Issue





# Climate Change- Future Global Temperature Rise

## Modeled vs. Observed (IPCC)



*Source: UN's Intergovernmental Panel on Climate Change (IPCC)*



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## Governor Crist's Energy Plan



**State government to become more energy efficient.**



**Florida to adopt California's auto-emissions rules by model year 2009.**



**New statewide diesel engine idle reduction standard.**



**Requires increase in energy performance of new construction by at least 15%.**



## **The Governor's plan**

**Requires utilities to reduce  
CO2 emissions to:**

- 2000 levels by 2017**
- 1990 levels by 2025**
- 80% below 1990 levels by 2050**



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## **The Governor's plan**

**Asks the Florida Public Service Commission to direct utilities to generate 20% of their electricity from renewable sources**



**biomass**



**wind**



**solar**



# Key Questions for Utilities

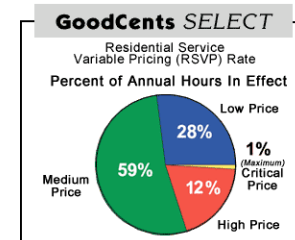
1. How can we meet physical requirements of CO<sub>2</sub> cap and renewables?
2. What is the most economic way to implement the proposed rules?
3. What is the potential price impact to customers?





## Preliminary Conclusions For Gulf Power

- **Extremely costly and risky to replace coal units and meet all growth requirements with only natural gas and renewables**
- **Nuclear is a critical option for Gulf Power – earliest on-line from greenfield would be 2020**
- **Costs increase significantly 2017-2020 (up to 59%) with shift to gas (before leveling off with nuclear additions)**
- **Cap and trade without free allocations doubles climate cost to customers**
- **Energy Efficiency and Conservation will continue to be an important part of our strategy**

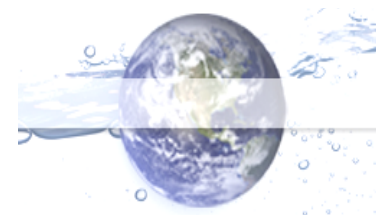
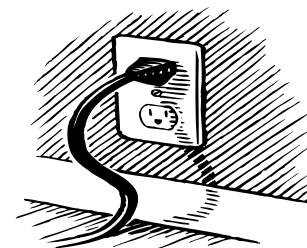




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# What We Should Support

- **Electricity that is Affordable, Reliable AND Environmentally Responsible**
- **Conservation and Energy Efficiency**
- **Reductions of Emissions**
- **Research, Development and Deployment of Renewables and Clean Technologies**





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*Thank You*